M-2750 Sensor Product Guide

Revision B

McAfee® Network Security Platform

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Preface

This guide provides the information you need to configure, use, and maintain your McAfee product.

Contents

- *About this guide*
- *Find product documentation*

About this guide

This information describes the guide's target audience, the typographical conventions and icons used in this guide, and how the guide is organized.

Audience

McAfee documentation is carefully researched and written for the target audience.

The information in this guide is intended primarily for:

- **Administrators** — People who implement and enforce the company's security program.
- **Users** — People who use the computer where the software is running and can access some or all of its features.

Conventions

This guide uses these typographical conventions and icons.

Book title, *term*, *emphasis*	Title of a book, chapter, or topic; a new term; emphasis.
Bold	Text that is strongly emphasized.
`User input, code, message`	Commands and other text that the user types; a code sample; a displayed message.
Interface text	Words from the product interface like options, menus, buttons, and dialog boxes.
Hypertext blue	A link to a topic or to an external website.
	Note: Additional information, like an alternate method of accessing an option.
	Tip: Suggestions and recommendations.
	Important/Caution: Valuable advice to protect your computer system, software installation, network, business, or data.
	Warning: Critical advice to prevent bodily harm when using a hardware product.

What's in this guide

This guide contains information necessary to setup your M-2750 Sensor model. This information includes guiding you through preconfiguring, cabling, and troubleshooting your Sensor.

Find product documentation

McAfee provides the information you need during each phase of product implementation, from installation to daily use and troubleshooting. After a product is released, information about the product is entered into the McAfee online KnowledgeBase.

Task

1 Go to the McAfee Technical Support ServicePortal at http://mysupport.mcafee.com.

2 Under **Self Service**, access the type of information you need:

To access...	Do this...
User documentation	1 Click **Product Documentation**. 2 Select a product, then select a version. 3 Select a product document.
KnowledgeBase	• Click **Search the KnowledgeBase** for answers to your product questions. • Click **Browse the KnowledgeBase** for articles listed by product and version.

1 Introducing Network Security Sensors

This section describes the McAfee® Network Security Sensors at a high-level and also describes the McAfee® M-2750 Network Security Sensor (Sensor) in detail.

Sensors are high-performance, scalable, and flexible content processing appliances built for the accurate detection and prevention of intrusions, misuse, distributed denial of service (DDoS) attacks, and network access control(NAC) of hosts. When deployed at key access points, a Sensor provides real-time traffic monitoring to detect malicious activity, and respond to the malicious activity as configured by the administrator.

After the Sensor is deployed and communication established, Sensors are configured and managed using the McAfee Network Security Manager (Manager) server.

The process of configuring a Sensor and establishing communication with the Manager is described in the later chapters of this guide. The Manager server is described in detail in the *McAfee Network Security Platform Manager Administration Guide.*

Contents

- *About the M-2750 Sensor*
- *M-2750 physical description*

About the M-2750 Sensor

The M-2750 Sensor provides effective network access control (NAC) of hosts.

NAC hosts involves regulating access to network resources based on host Operational Status level (Standard/ DHCP NAC), identity of the user logged into the host (IBAC) or both, and OOB NAC (L2, L3). The Sensor also provides the Hybrid NAC functionality where a host is first subjected to DHCP-NAC and then Standard NAC at different ports of the same Sensor. For more information on the NAC functionality and configurations of the Manager, see *McAfee® Network Security Platform NAC Administration Guide*.

Throughout this guide, the terms 'Sensor' and 'M-2750' refer to the M-2750 Sensor in general.

M-2750 physical description

The high-port density M-2750 Sensor, designed for high bandwidth links, is equipped with twenty Fast Ethernet ports (or interfaces). This Sensor can monitor ten 1 Gbps Ethernet segments in full-duplex mode (tap or in-line), and twenty segments in half-duplex mode (monitoring SPAN ports or hubs). An M-2750 can monitor upto 600 Mbps of aggregate traffic.

Ports on the Sensor

M-2750 Sensor is a 2RU (2 rack unit) and is equipped with the following components:

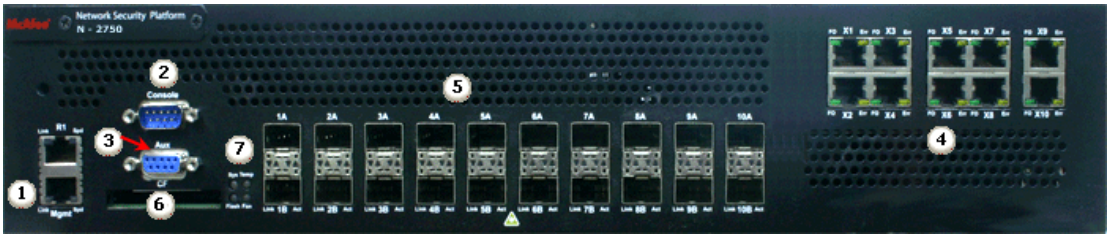

Figure 1-1 M-2750 Sensor front panel

Item	Description
1	RJ-45 10/100/1000 Management port (1)
2	RS-232C Console port (1)
3	RS-232C Auxiliary port (1)
4	RJ-11 Fail-Open Control ports (10)
5	SFP One Gigabit Ethernet Monitoring ports (20)
6	External Compact Flash port (1)
7	Front panel LEDs (4)

Figure 1-2 M-2750 Sensor back panel

Item	Description
8	Power supply A (included)
9	Power supply B (optional; sold separately)
10	Back panel LEDs (5)

1 **One RJ-45 10/100/1000 Management port**, which is used for communication with the Manager server. You can assign an IP address to this port during installation.

2 **One RS-232C Console port**, which is used to set up and configure the Sensor using the CLI.

3 **One RS-232C Auxiliary port**, which may be used to dial in remotely to set up and configure the Sensor.

4 **Ten RJ-11 Fail-Open Control ports**, designed for use the Optical Fail-Open Bypass kit. The ports are marked X1, X2, X3, X4, X5, X6, X7, X8, X9, and X10, and are used in conjunction with ports 1A/1B, 2A/2B, 3A/3B, 4A/4B, 5A/5B, 6A/6B, 7A/7B, 8A/8B, 9A/9B, and 10A/10B, respectively.

5 **Twenty small form-factor pluggable (SFP) 1 Gigabit Monitoring ports**, which enable you to monitor ten Ethernet segments In-Line.

If you choose to run in failover mode, port 10A is used to interconnect with a standby M-2750 Sensor.

The gigabit ports of the M-2750 running in in-line mode fail-close, meaning that if the Sensor fails, it will interrupt/block data flow. Refer to the *Gigabit Fail-Open Bypass Kit Guide* for more information.

6 **One External Compact Flash port**. This port is used only for flash recovery purposes. That is, this port is used in troubleshooting situations where the Sensor's internal flash is corrupted and you need to reboot the Sensor through the external compact flash. For more information, see the on-line KnowledgeBase at http://mysupport.mcafee.com/Eservice/. Click **Search the KnowledgeBase**.

7 **Front panel LEDs.** The LEDs which indicate the Sensor's general operational status. For more information, see Front and back panel LEDs.

8 **Primary Power Supplies—PWR A** (included). Power supply A is included with each Sensor. The supply uses a standard IEC port (IEC320-C13). McAfee provides a standard; 2m NEMA 5-15P (US) power cable (3 wire). International customers must procure a country-appropriate power cable.

9 **Power Supplies—PWR B** (optional, purchased separately). Power supply B is a hot-swappable, redundant power supply. This power supply also uses a standard IEC320-C13 port, and you can use the McAfee-provided cable or acquire one that meets your specific needs.

10 **Back panel LEDs**. The LEDs which indicate the Sensor's fan and power supply operational status. For more information, see Front and back panel LEDs.

See also

Front and back panel LEDs on page 9

Front and back panel LEDs

Figure 1-3 Front panel LEDs

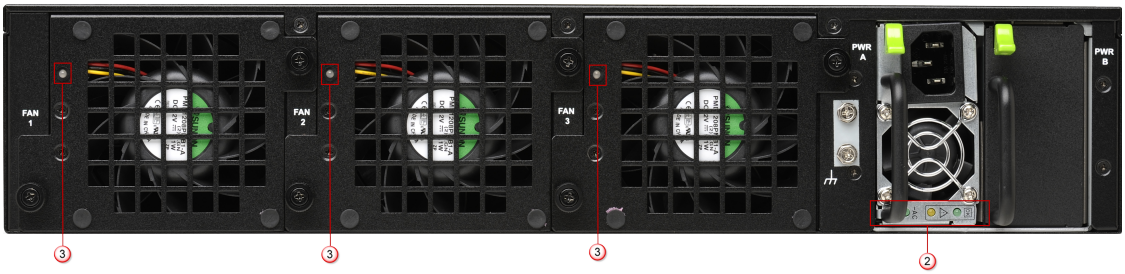

Figure 1-4 Back panel LEDs

Region in the image	LEDs represented here
1	Sys, Temp, Flash, Fan
2	Power A

Region in the image	LEDs represented here
3	Back panel fan LEDs
4	Management Port Speed, Management Port Link, Response Port Speed, Response Port Link
5	Gigabit Ports (SFP) Act, Gigabit Ports (SFP) Link
6	Fail-Open Control Port FO, Fail-Open Control Port Err
7	Bypass LEDs

The front panel LEDs provide status information for the health of the Sensor and the activity on its ports. The back panel LEDs provide information regarding the Sensor fans and the power supply.

The following tables describe the front and back panel LEDs of M-2750:

LED	Status	Description
Sys	Green	Sensor is operating.
	Amber	Sensor is booting. (It could also indicate a system failure.)
Temp	Green	Inlet air temperature measured inside chassis is normal. (Chassis temperature OK.)
	Amber	Inlet air temperature measured inside chassis is too hot. (Chassis temperature too hot.)
Flash	Green	Activity on external compact flash.
	Off	No activity on external compact flash.
Fan	Green	All three fans are operating.
	Amber	One or more fans have failed.

LED	Status	Description
Power A		
OK	Green	Power Supply A is functioning.
⚠	Amber	Power Supply A is not functioning.
~AC	Green	Power Supply in AC mode.
Power B (If present - Not shown in the picture)		
OK	Green	Power Supply B is functioning.
⚠	Amber	Power Supply B is not functioning.
~AC	Green	Power Supply in AC mode.
ℹ If a power supply is not present, both green and amber LEDs are off.		
Fan 1	Green	Fan 1 is operating.
	Amber	Fan 1 is not operating.
Fan 2	Green	Fan 2 is operating.
	Amber	Fan 2 is not operating.
Fan 3	Green	Fan 3 is operating.
	Amber	Fan 3 is not operating.

LED	Status	Description
Management Port Speed	Green	The port speed is 1000 Mbps.
	Amber	The port speed is 100 Mbps.
	Off	The port speed is 10 Mbps.
Management Port Link	Green	The link is connected.
	Off	The link is disconnected.
Response Port Speed	Green	The port speed is 1000 Mbps.
	Amber	The port speed is 100 Mbps.
	Off	The port speed is 10 Mbps.
Response Port Link	Green	The link is connected.
	Off	The link is disconnected.
Gigabit Ports (SFP) Act	Amber	Data transferring.
	Off	No data transferring.
Gigabit Ports (SFP) Link	Green	The link is connected.
	Off	The link is disconnected.
Fail-Open Control Port FO	Green	The Sensor is powering the fail-open kit.
	Off	The Sensor is not powering the fail-open kit.
Fail-Open Control Port Err	Amber	The fail-open control cable is disconnected or the Sensor is operating in bypass mode.
	Off	There is no error.
Byp1, Byp2 Byp3, Byp4		
In-line, Fail-open	Green	The Sensor port pair is in-line, receiving normal traffic.
In-line, Fail-close		The Sensor port pair is in-line, receiving normal traffic.
Tap or SPAN		The Sensor port receives normal traffic. Traffic is either passing through or has been dropped.
Bypass	OFF	The Sensor port pair is not in-line and traffic is bypassed.

2 Before you install

This chapter describes the best practices for deployment of Sensors on your network. Topics include system requirements, site planning, safety considerations for handling the Sensor, and usage restrictions that apply to the Sensor model.

Contents

- *Usage restrictions*
- *Safety measures*
- *Working with fiber-optic ports*
- *Contents of the Sensor box*
- *Unpack the Sensor*

Usage restrictions

The following restrictions apply to the use and operation of a Sensor:

- You may not remove the outer shell of the Sensor. Doing so will invalidate your warranty.
- The Sensor appliance is not a general purpose workstation.
- McAfee prohibits the use of the Sensor appliance for anything other than operating McAfee® Network Security Platform (formerly McAfee® IntruShield®).
- McAfee prohibits the modification or installation of any hardware or software in the Sensor appliance that is not part of the normal operation of McAfee Network Security Platform.

Safety measures

Please read the following warnings before you install the product. These safety measures apply to all Sensor models unless otherwise specified.

Failure to observe these safety warnings could result in serious physical injury.

Warnings:

- Read the installation instructions before you connect the system to its power source.
- To remove all power from the Sensor, unplug all power cords, including the redundant power cord.
- Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
- Before working on an equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground, and can cause serious burns or weld the metal object to the terminals.

- This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.
- Do not remove the outer shell of the Sensor. Doing so will invalidate your warranty.
- Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Blank faceplates and cover panels prevent exposure to hazardous voltages and currents inside the chassis, contain electromagnetic interference (EMI) that might disrupt other equipment, and direct the flow of cooling air through the chassis.
- To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.
- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
- Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Working with fiber-optic ports

The Sensor uses fiber-optic connectors for its Monitoring ports. The connector type is a small form-factor pluggable (SFP) fiber-optic connector that is LC-duplex compatible.

Note the following:

- Fiber-optic SFP ports are considered Class 1 laser or Class 1 LED ports.

  To avoid exposure to radiation, do not stare into the aperture of a fiber-optic port. Invisible radiation might be emitted from the aperture of the port when no fiber cable is connected.

- Only FDA registered, EN 60825-1 and IEC 60825-1 certified Class 1 SFP laser transceivers are acceptable for use with the Sensor.

Contents of the Sensor box

The following accessories are shipped in the Sensor crate:

- One Sensor.
- One power supply.
- Power cords. McAfee provides standard and international power cables.
- One set of rack mounting rails.
- One set of rack mounting ears.
- One printed *M-2750 Slide Rail Assembly Procedure.*
- One printed *M-2750 Quick Start Guide.*
- Release Notes.

Unpack the Sensor

Task

1. Place the Sensor box as close to the installation site as possible.
2. Position the box with the text upright.
3. Open the top flaps of the box.
4. Remove the accessory box within the Sensor box.
5. Verify you have received all parts.
   These parts are listed on the packing list and in Contents of the Sensor box.
6. Remove the Slide Rail Kit.
7. Pull out the packing material surrounding the Sensor.
8. Remove the Sensor from the anti-static bag.
9. Save the box and packing materials for later use in case you need to move or ship the Sensor.

If any of the contents from the preceding list are missing or damaged, contact McAfee support.

3 Setting up the Sensor

This chapter describes the process of setting up a Sensor to prepare it for configuration.

Contents

- *Setup overview*
- *Position the Sensor*
- *Redundant power supply*
- *Cable the Sensor*
- *Small form-factor pluggable modules*
- *Power on the Sensor*
- *Power off the Sensor*

Setup overview

Setting up a Sensor involves the following steps:

Task

1. Positioning the Sensor.
2. Installing interface modules (SFP).
3. Attaching power, network, and monitoring cables.
4. Powering on the Sensor.
5. Configuring the Sensor after you have set up and powered on the Sensor.

See also

Position the Sensor on page 17
Attaching cables to the Sensor on page 3

Position the Sensor

Place the Sensor in a physically secure location, close to the switches or routers it will be monitoring. Ideally, the Sensor should be located within a standard communications rack. Each M-2750 is a 2RU (2 rack unit). To mount the Sensor on a rack, you will attach two mounting ears and rails to the Sensor as described in the subsequent sections.

Install the rails and ears on the chassis and rack

Before you begin

Before you install the rails and ears on the chassis, make sure that power is OFF. Remove the power cable and all network interface cables from the Sensor.

Each rack-mounting rail and ear has holes that match up with holes in the chassis. You will need a screwdriver to secure the slotted panhead screws.

Task

1. Verify that you have all the parts you will need: two three-in-one rails, two chassis ears, and fourteen slotted panhead screws.

   Each rail includes a rail that mount to the rack, a rail that slides into the mounted rail, and a rail that is attached to the chassis.

2. Disassemble the slide rail by pulling the inner rail out and pushing the side latch in to separate.

3. Attach the inner rail to the chassis by fastening it with the screws provided.

4. Attach the ear to each side of the chassis.

5. Mount the L-shape and external rail to your rack frame.

   The adjustable end of the L-shape rail is intended for placement at the back of your rack. Adjust the rail as needed for length. You are now ready to mount the Sensor in the rack.

Mount the Sensor on a rack

McAfee recommends rack-mounting your Sensors. The rack-mounting hardware included with the Sensors is suitable for most 19-inch equipment racks and telco-type racks. For maintenance purposes, you should have access to the front and rear of the Sensor.

Before you mount the Sensor on the rack, make sure that power is OFF. Remove the power cable and all network interface cables from the Sensor.

Because of the weight of the appliance, McAfee recommends that two people place the chassis into the rail cabinet.

Insert the chassis into the rail cabinet and complete the rack-mounting of the Sensor by securing the rack mount ears to two posts or mounting strips in the rack. The ears secure the Sensor to two rack posts. Be sure to fasten the ears securely to the rack.

You can also mid-mount the Sensor (optional). For details, refer to the corresponding Sensor *McAfee Network Security Platform Quick Start Guide.*

Remove a Sensor from the rack

Because of the weight of the appliance, McAfee recommends that two people remove the chassis from the rail cabinet. When removing the chassis from the rack, pull chassis forward until you hear the innermost rails snap in place. On each side of the rails, press in the release button as pictured below and continue pulling the chassis.

Figure 3-1 Rail release latch for the Sensor

Redundant power supply

A basic configuration of the Sensor includes one hot swappable supply. You may install a second hot-swappable power supply (purchased separately from McAfee) for redundancy. Each of these modules has one handle for insertion or extraction from the unit as well as a release latch.

Figure 3-2 Inserting the power supply for the Sensor

Install the power supply

Task

1 Unpack the power supply from its shipping carton.

2 Remove the faceplate panel covering the power supply slot.

The faceplate panel should remain in place unless a power supply is in the power supply slot. Do not operate the Sensor without the faceplate panel in place.

3 Place the power supply in the slot with the cable outlet facing front and on the left side of the faceplate.

Figure 3-3 Power supply units of the Sensor

4 Slide in the power supply until it makes contact with the backplane, then push firmly to mate the connectors solidly with the backplane.

For true redundant operation with the optional redundant power supply, McAfee recommends that you plug each supply into a different power circuit. For optimal protection, use uninterruptable power sources.

Remove the power supply

Note that the power supplies are hot-swappable. To avoid data interruption, do not power off both power supplies on an in-line Sensor, else the Sensor shuts down and all data traffic stops. Power off only the power supply you are replacing.

Task

1 Unplug the power cable from its power source and remove the power cable from the power supply.

2 Put on an antistatic wrist or ankle strap.

3 Attach the strap to a bare metal surface of the chassis.

4 Push the release latch inward toward the handle.

5 Squeeze the handle of the power supply and pull it out.

6 Use faceplate panels to protect unused slots from dust and reduce electromagnetic radiation.

7 Replace the mounting bracket.

To remove all power from the Sensor, unplug all power cords.

Cable the Sensor

Follow the steps outlined in Attaching Cables to the Sensor to connect cables to the monitoring, response, console, and management ports on your Sensor.

See also

Attaching cables to the Sensor on page 3

Small form-factor pluggable modules

The Sensor uses two types of small form-factor pluggable modules as shown in the following table.

Type	Performance
SFP	10/100/1000 Mbps (copper) 1 Gbps (fiber optic)

Each module is a hot-swappable input/output device that plugs into an LC-type Gigabit Ethernet port, linking the module port with a copper or fiber-optic network. SFP optical interfaces are less than half the size of GBIC interfaces.

To ensure compatibility, McAfee supports only those SFP modules purchased through McAfee or from a McAfee-approved vendor. For a list of approved vendors, see the on-line KnowledgeBase at http://mysupport.mcafee.com/Eservice/. Click **Search the KnowledgeBase**.

These installation instructions provide information for installing an SFP module that uses a bail-clasp for securing the module in place in the Sensor. Your module may be slightly different. Check the module manufacturer's installation instructions for more details.

For ease of installation, insert the module in the Sensor while it is powered down and before placing it on a rack.

To prevent eye damage, do not stare into open laser apertures.

SFP module

The SFP module is a hot-swappable, protocol-independent, compact, optical receiver, which allows for greater port density than the standard GBIC. This module operates at varying speeds for up to 1 Gigabit per second on Gigabit Ethernet. The SFP module operates in single mode and multimode. Additionally, this module transmits on an 850-nanometer wavelength on short reach (SR) and 1310-nanometer wavelength on long reach (LR).

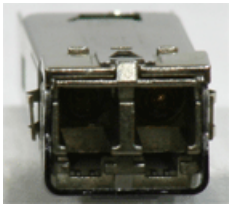

Figure 3-4 SFP module for the Sensor

Install a module

This section provides the steps to install an SFP module with a bail clasp.

Task

1 Remove the module from its protective packaging.

2 Ensure the module is the correct model for your network.

3 Locate the label on the module and ensure that the alignment groove is down.

4 Grip the sides of the module with your thumb and forefinger and insert module into the module socket.

Modules are keyed to prevent incorrect insertion.

Figure 3-5 SFP module in the Sensor Monitoring port

Remove a module

Task

1 Disconnect the network cable from the module.

2 Release the module from the slot by pulling the bail-clasp out of its locked position.

3 Slide the module out of the slot.

4 Insert the module plug into the optical bore for protection.

Power on the Sensor

Before you begin

Do not attempt to power on the Sensor until you have installed the Sensor in a rack, made all necessary network connections, and connected the power cable to the power supply.

If you are installing a redundant power supply, you should install it as described in Installing a power supply. For true redundant operation with the optional redundant power supply, McAfee recommends that you plug each supply into a different power circuit.

Task

1 Connect the power cable to the Sensor power supply.

2 Connect the power cable to a power source.

The Sensor has no power switch. It powers on as soon as one of its power cable is connected to a power source.

Power off the Sensor

McAfee recommends that you use the shutdown CLI command to halt the Sensor before powering it down. For more information on CLI commands, see *McAfee Network Security Platform CLI Guide.*

4 Attaching cables to the Sensor

Follow the steps outlined in this chapter to connect cables to the various ports on your Sensor.

Contents

- *Cable the Console port*
- *Cable the Auxiliary port*
- *Cable the fail-open port*
- *Cable the Management port*
- *Cable the Monitoring ports*
- *Cable for in-line*
- *Connect the cables for tap mode*
- *Connect the cables for SPAN or hub mode*
- *Cable the failover interconnection*
- *About the fail-open hardware*

Cable the Console port

The **Console** port on the Sensor is used for setup and configuration of the Sensor.

Task

1 For console connections, plug the DB9 Console cable supplied by McAfee into the Console port on the Sensor.

This port is labeled as **Console** on the Sensor front panel.

2 Connect the other end of the Console port cable directly to a COM port of the PC or terminal server you will use to configure the Sensor, for example, a PC running correctly configured Windows HyperTerminal software.

You must connect directly to the console for initial configuration.

Required settings for HyperTerminal are:

Name	Setting
Baud rate	38400
Number of bits	8
Parity	None
Stop bits	1
Flow Control	None

3 Power on the Sensor.

Cable the Auxiliary port

The Auxiliary port is used for modem access to the Sensor for setup and configuration.

You cannot use a modem the first time you configure a Sensor.

Task

1 For modem connections, plug a straight-through modem cable into the Auxiliary port on the Sensor.

This port is labeled as **Aux** on the Sensor front panel.

2 Connect a modem to the **Aux** port.

3 Connect a telephone line to the modem.

Required settings for the **Aux** port are:

Name	Setting
Baud rate	38400
Number of bits	8
Parity	None
Stop bits	1
Flow Control	None

Cable the fail-open port

Fail-open functionality for the GE Monitoring ports is accomplished using the standard Gigabit Fail-open Bypass Kit, sold separately. McAfee recommends deploying active fail-open kits for protection of mission critical networks. Both copper and optical versions are available. For more information, see the documentation that accompanies the Kit.

Cable the Management port

The Management port is used for communication with the Manager server.

Task

1 Plug a Cat-5e Ethernet cable into the Management port.

This port is labeled as **Mgmt** on the front panel of the Sensor.

2 Connect the other end of the cable to the network device, such as a hub, a switch, or a router that in turn connects to the Manager server.

To isolate and protect your management traffic, McAfee strongly recommends using a separate, dedicated management subnet to interconnect the Sensors and the Manager.

Cable the Monitoring ports

Connect to the network devices you will be monitoring through the Sensor Monitoring ports. You can deploy Sensors in the following operating modes:

- In-line mode (fail-closed)
- In-line mode (fail-open)
- External tap mode
- SPAN or Hub mode
- Failover

How to use peer ports

All full-duplex Sensor deployment modes require the use of two peer monitoring ports on the Sensor. On the Sensors, the numbered ports are wired in pairs to accommodate the traffic.

The following SFP Gigabit Ethernet ports are coupled and must be used together:

Port Pairs	Transceiver Type
1A and 1B	SFP
2A and 2B	SFP
3A and 3B	SFP
4A and 4B	SFP
5A and 5B	SFP
6A and 6B	SFP
7A and 7B	SFP
8A and 8B	SFP
9A and 9B	SFP
10A and 10B	SFP

You cannot configure, for example, 1A and 2A to work together as a pair.

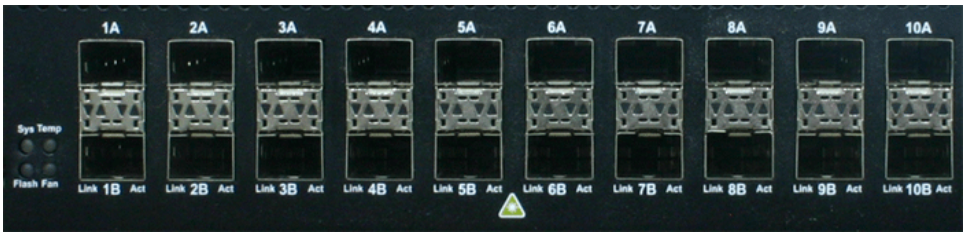

Figure 4-1 Using peer ports

Default Monitoring port speed settings

Be sure that the switch/router ports connected to the Sensor Monitoring ports match the Sensor configuration.

Table 4-1 Default Monitoring port speed settings

Monitoring Ports	Operating Mode	Speed/Duplex Setting
SFP ports for copper	In-line fail-close (port pair)	Auto-negotiation is on.
SFP ports for fiber-optic	In-line fail-close (port pair)	Auto-negotiation is on.

Cable types for routers, switches, hubs, and PCs

This section describes the types of cables that you require to connect the Sensor to other network devices:

- Use a crossover Ethernet RJ-45 cable to connect a router port to the 10/100/1000 copper SFP Monitoring ports.
- Use a straight-through Ethernet RJ-45 cable to connect a switch/hub port to 10/100/1000 copper SFP Monitoring ports.
- Use a crossover Ethernet RJ-45 cable to connect a router port to PC to the Sensor Management port.

You should also use a crossover Ethernet RJ-45 cable to connect a PC to the Sensor monitoring port.

Cable for in-line

The Gigabit Ethernet ports fail-close, meaning they stop the flow of traffic if the Sensor fails. To allow traffic to flow uninterrupted, you must use special hardware and cable the Sensor for fail-open functionality. For instructions, see the section later in this chapter.

This section provides the steps to connect the Sensor's Gigabit Ethernet ports so they fail-close.

Task

1. Plug the cable appropriate for use with your Gigabit Ethernet into one of the Monitoring ports, for example, 1A.
2. Plug another cable into the peer of the port used in Step 1.
3. Connect the other end of each cable to the network devices that you want to monitor.

   For example, if you plan to monitor traffic between a switch and a router, connect the cable connected to 1A to the switch and the one connected to 1B to the router.

See also

Cable types for routers, switches, hubs, and PCs on page 28
How to use peer ports on page 27

Connect the cables for tap mode

To deploy the Sensor in tap mode, you must use a Sensor's Gigabit Ethernet Monitoring port pair with a third-party external tap.

For a list of McAfee-approved third party vendors, see the KnowledgeBase at http://mysupport.mcafee.com/Eservice/. Click the link **Search the KnowledgeBase** and locate the relevant KnowledgeBase article.

Task

1. Plug the cable appropriate for use with your Gigabit Ethernet into one of the Monitoring ports, for example, 1A.
2. Plug another cable into the peer of the port used in Step 1.

3 Connect the other end of each cable to the tap.

4 Connect the network devices that you want to monitor to the tap.

Connect the cables for SPAN or hub mode

For the Sensor, monitoring in SPAN or hub mode occurs in in-line fail-open mode. When you monitor in SPAN or hub mode, you use only single ports.

To connect an Sensor to a SPAN port or hub, plug an LC fiber-optic or 45 cable into one of the modules and connect the other end of the cable to the SPAN port or the hub.

Cable the failover interconnection

Failover requires connecting two identical M-2750 Sensors (same model, same software) using an interconnection cable or cables. Gigabit ports 10A is the failover interconnection port on the M-2750 Sensor. A failover cable is the only additional hardware required to support failover communication between two M-2750 Sensors.

Task

1 Plug the cable appropriate for use with your SFP module into port 10A of the active Sensor.

2 Connect the other end of the cable to port 10A of the standby Sensor.

Figure 4-2 M-2750 failover pair

About the fail-open hardware

The standard Gigabit Fail-Open Kit (sold separately) minimizes the potential risks of in-line Sensor failure on critical network links. Both copper and optical versions of the Kit are available for 1 Gigabit ports.

The Monitoring ports on M-2750 fail-close; thus, if the Sensor is deployed in-line, a hardware failure results in network downtime. Fail-open operation for the Monitoring ports requires the use of the optional external Bypass Switch provided in the Kit.

With the Bypass Switch in place, normal Sensor operation supplies power to the switch through a control cable. While the Sensor is operating, the switch is "on" and routes all traffic directly through the Sensor. When the Sensor fails, the switch automatically shifts to a bypass state: in-line traffic continues to flow through the network link, but is no longer routed through the Sensor. Once the Sensor resumes normal operation, the switch returns to the "on" state, once again enabling in-line monitoring.

Note that Sensor outage breaks the link connecting the devices on either side of the Sensor for a brief moment and requires the renegotiation of the network link between the two peer devices connected to the Sensor. Depending on the network equipment, this disruption introduced by the renegotiation of the link layer between the two peer devices may range from a couple of seconds to more than a minute with certain vendors' devices.

A very brief link disruption may also occur while the links between the Sensor and each of the peer devices are renegotiated to place the Sensor back in in-line mode. This outage, again, varies depending on the device, and can range from a few seconds to more than a minute.

Installation and troubleshooting instructions for the Kit can be found in the Guide that accompanies the kit. For example, for more information on the Optical kit, see the standard *Gigabit Optical Fail-Open Bypass Kit Guide.*

5 Troubleshooting the Sensor

This section provides the solution to some of the common installation problems.

Problem	Possible Cause	Solution
LED is off.	The control cable has been disconnected.	Check the control cable and ensure it is properly connected to both the Sensor and the Bypass Switch.
LED is off.	The Sensor is powered off.	Restore Sensor power.
LED is off.	The Sensor port cable is disconnected.	Check the Sensor cable connections.
Sensor is operational, but is not monitoring traffic.	Network device cables have been disconnected.	Check the cables and ensure they are properly connected to both the network devices and the Bypass Switch.
Sensor is operational, but is not monitoring traffic.	The Sensor ports have not been enabled in the Manager.	The Sensor will not monitor traffic on the ports unless the ports are enabled in the Manager. Ports are disabled in a Sensor failure; they must be re-enabled for Sensor monitoring to resume.
Network or link problems.	Improper cabling or port configuration.	Ensure that the transmit and receive cables are properly connected to the Bypass Switch.
Runts or giants errors on switch and routers.	Improper cabling or port configuration.	Ensure that the transmit and receive cables are properly connected to the Bypass Switch.
The system fault "Switch absent" appears in the Manager Operational Status window.	The control cable has been disconnected.	Check the control cable and ensure it is properly connected to both the Sensor and the Bypass Switch.

A Technical specifications

The following table lists the specifications for each M-2750 Sensor.

Sensor Specifics	Description
Dimensions	Without mounting ears/rails/cable management: • width: 15.88 in. (40.34 cm) • height: 3.38 in. (8.59 cm) • depth: 24.50 in. (62.23 cm) Dimensions do not include cables or power cords.
Weight	40 lbs (18.14 kg)
Voltage Range	100-240V AC
Frequency	50/60Hz
Vibration, operating	Sinusoidal: 3 to 500 Hz @ 0.15 gpk Random: 2.5 to 200 Hz @ 0.33 g
Vibration, non-operating	Sinusoidal: 10 to 500 Hz @ 0.8 gpk Random: 2.5 to 200 Hz @ 1.05 g
Power requirements	450W
Ambient Temperature Range (Non-condensing)	Operating 0C(32F) to 40C(104F) Non-operating -40C(-40F) to 70C(158F)
Relative Humidity (Non-condensing)	Operating 5%-90% non-condensing Non-operating 5% to 95% non-condensing
System Heat Dissipation	AC (max): 535W, 1825 BTU/hr
Airflow	200 lfm (1 m/s)
Altitude	Sea level to 10000 ft (3048 m)

B Regulatory, compliance, and safety information

The Sensor meets the following standards:

Sensor regulatory, safety, and compliance	
Regulatory:	Products with the CE Marking are compliant with the 89/336/EEC and 73/23/EEC directives, which include the safety and EMC standards listed.
Safety certification:	EN 55024: 1998 + A1:2001 + A2: 2003 - Immunity: • EN-61000-4-2: ESD Immunity • EN-61000-4-3: Radiated Immunity • EN-61000-4-4 EFT/B Immunity • EN-61000-4-5: Surge Protection • EN-61000-4-6: Conducted Immunity EN-61000-4-11: Voltage Interruption/Dips (N/A for DC) CISPR/KN22 : • KN-61000-4-2: ESD Immunity • KN-61000-4-3: Radiated Immunity • KN-61000-4-4 EFT/B Immunity • KN-61000-4-5: Surge Protection • KN-61000-4-6: Conducted Immunity • KN-61000-4-11: Voltage Interruption/Dips (N/A for DC)
Electromagnetic compliance (emissions):	FCC Part 15 Class A/Industry Canada ICES-003 Issue 4, February 7, 2004 Class A VCCI V-1/93.11, V-2/97.04, V-4/97 Class A AS/NZS CISPR22: 2004 Class A CNS 13438: May 1997 SS IEC CISPR22: 1993, Singapore IDA Class A EN 55024: 1998 + A1:2001 + A2: 2003 - Emissions: • Radiated Emissions • Conducted Emissions • EN 61000-3-2: 2000 Harmonic Current Emissions • EN 61000-3-3: 1995 + A1: 2001 Voltage Fluctuation/Flicker CISPR/KN22:

Sensor regulatory, safety, and compliance
• Radiated Emissions • Conducted Emissions

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